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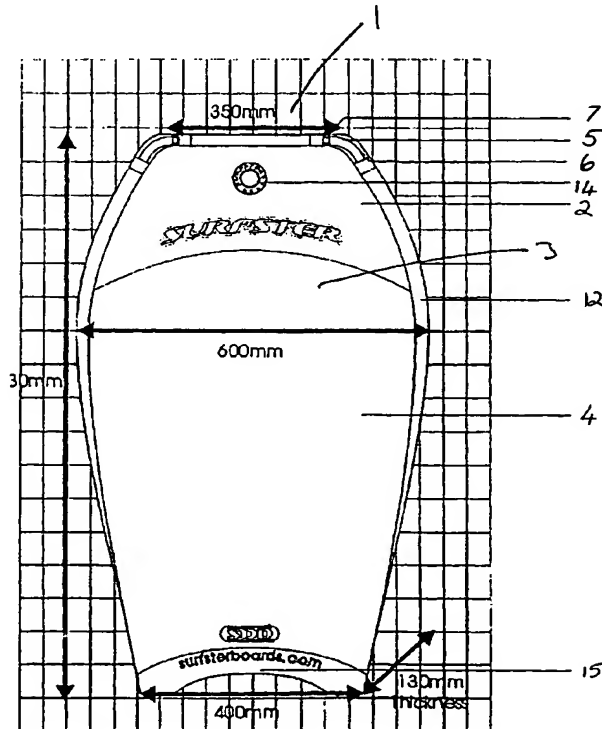
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(54) Title: SURFCRAFT



(57) Abstract: A craft (1) for supporting a rider on the water in the form of an elongate, substantially planar member having a top riding surface (3), and a bottom planing surface wherein said planar member comprises an inner inflatable bladder (14) secured within an outer sleeve (2) wherein said sleeve (2) comprises the top riding surface (3) and the bottom planing surface.

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ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK,  
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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### **SURFCRAFT**

The present invention relates to surfcraft. In particular the present invention relates to a craft for riding on the surface of the water. The craft of the present invention is in the form of a bodyboard or the like. Such  
5 craft may be propelled by the motion of the waves or surf.

Buoyant boards have been utilised as surfcraft. Over the past 20 years bodyboards have developed from the original "boogie boards" and a variety of surfcraft such as bodyboards are currently available. Generally bodyboards are formed from panels of closed cell polymeric foam. Typically,  
10 such surfcraft are just over a metre in length and about half a metre in width. Generally, these surfcraft are awkward to store and to transport due to their size and shape.

Inflatable surfcraft have been produced and are generally similar in construction to inflatable beds and have only a single skin. Such  
15 inflatable craft generally lack the necessary stiffness and hydrodynamic properties to provide an acceptable level of performance to make them feasible alternatives to surfcraft made out of rigid materials such as closed cell polymeric foam.

We have now found that by providing an inflatable bladder  
20 within an outer sleeve where the outer sleeve forms a top riding surface and a bottom planing surface it is possible to produce an inflatable surfcraft with improved hydrodynamic performance. According to the present invention there is provided a craft for supporting a rider on the water in the form of an elongate, substantially planar member having a top riding surface, a bottom,  
25 planing surface wherein said planar member comprises an inner inflatable bladder secured within an outer sleeve wherein said sleeve comprises the top riding surface and the bottom, planing surface.

The inflatable bladder may preferably be constructed from any suitable material. Suitable materials are capable of being sealed to form an  
30 air tight bladder. Desirably the materials used to form the bladder are sufficiently flexible to be rolled up in a deflated condition but are sufficiently rigid in an inflated condition such that a rider may be supported on the

surfcraft without significant deformation. We have found that by minimising the deformation of the surfcraft the hydrodynamic properties can be maintained. For example, it is preferred that a heavy duty PVC ranging from 18 to 30 gauge PVC be used to form the inflatable bladder. The PVC is ultrasonically welded. The inflatable bladder preferably includes valve for inflating and deflating the bladder. A variety of valves may be suitable. For example, a retractable valve is particularly preferred so that it does not protrude from the surfcraft. A vinyl stem retractable valve may be used. The valve may be configured to engage with a mechanical pump.

It is preferred that the inner inflatable bladder be shaped substantially in conformity with the desired shape of the surfcraft although the outer sleeve may be used to constrain the inflatable bladder to a desired shape.

The inner inflatable bladder is of ribbed construction so as to retain a planar shape. The inflatable bladder may also be seamed or bonded in other configurations whereby a relatively planar elongate bladder is produced once the bladder is inflated.

The inflatable bladder may be removed from the outer sleeve for cleaning, replacement or repair. The bladder may be removed from outer sleeve via an opening in the tail which is sealed with a hook and loop fastener such as Velcro™.

The outer sleeve or cover may serve to constrain the inflatable bladder to the desired shape. The outer sleeve has an upper riding surface and a lower planing surface. The upper riding surface and the lower planing surface may be joined directly or may be preferably joined by a side gusset.

The outer sleeve may include a variety of optional features. For example a leash attachment may be provided on the nose of the surfcraft. Preferably handles and knuckle guards may also be provided on the nose of the surfcraft. It is preferred that leash attachment, handles and knuckle guards be formed integrally with the outer sleeve. In a preferred configuration, a leash attachment, handles and knuckle guards are provided integrally on the outer sleeve at each corner of the nose of the surfcraft.

Preferably the outer sleeve is a sewn and laminated sheath made from a heavy-duty nylon fabric. A nylon fabric ranging from 240 to 840 denier is preferred. The outer sleeve may preferably include on the upper riding surface a panel on which a rider may be located. Preferably the panel  
5 may be formed from padded material and provide the rider with a degree of comfort and protection. It is particularly preferred that the panel is formed from a soft material such as neoprene or terry-cloth material and act as a body protector.

The upper surface may also include provision for the inflation  
10 valve of the inflatable bladder to be extended therethrough for ready access for inflation and deflation without having to remove the bladder from the sleeve.

The leash attachment may be in the form of an aperture extending through a handle. Alternatively the leash attachment may be  
15 formed as an aperture through the outer sleeve.

The handle may be attached to the outer sleeve or be formed integrally therewith. The handle may also be attached to or formed integrally with the inner inflatable bladder and extend through the outer sleeve. Typically the handle may be formed from closed cell polymeric foam.

20 The knuckle guard preferably extends from the handle and is formed from a soft material such as neoprene or terry cloth.

The bottom, planing surface of the outer sleeve may be formed from heavy-duty nylon fabrics ranging from 240 to 840 denier. In an alternative configuration the bottom, planing surface may include fins or other  
25 configurations adapted to provide improved hydrodynamic properties. In one alternative embodiment, the bottom, planing surface may include a rigid panel wherein said rigid panel may further include fins or the like.

Preferably the tail of the bottom, planing surface includes a drainage port for allowing water to be removed from inside the outer sleeve.  
30 The drainage port may preferably be in the form of a plasticised nylon mesh. By providing a drainage port at the rear of the surfcraft, any water that collects behind the outer corner and the bladder may be drained by standing the

surfcraft upright. It is preferred that the drainage port extends across the width of the tail of the surfcraft.

Preferably the outer sleeve includes a closure system such as a Velcro closure to retain the inner inflatable bladder securely within the outer sleeve.

Preferably the surfcraft of the present invention is substantially planar having a narrowed nose section and a tail in the form of a swallowtail or bat-wing.

Advantageously the surfcraft of the present invention may be deflated and compacted for storage and transport. In the embodiment where the bottom, planing surface is of rigid material the surfcraft may be stacked in a deflated state. Alternatively where the bottom planing surface is of flexible material, such as heavy duty nylon or of a flexible, semi-rigid material, the surfcraft may be deflated and rolled up for storage and transport.

The present invention will now be described with reference to the following drawings. It will be appreciated that the accompanying drawings are provided for illustrative purposes and do not limit the scope of the invention disclosed herein.

Figure 1 shows a top plan view of the outer sleeve of a surfcraft of the present invention;

Figure 2 shows a bottom plan view of the outer sleeve shown in Figure 1;

Figure 3 shows a top plan view of the inflatable bladder of the surfcraft of the present invention;

Figure 4 shows a top view of a surfcraft of the present invention;  
Figure 5 shows a front view of the surfcraft shown in Figure 4;  
Figure 6 shows a rear view of the surfcraft shown in Figure 4;  
Figure 7 shows a bottom view of the surfcraft shown in Figure 4;  
and

Figure 8 shows a side view of the surfcraft shown in Figure 4.

The outer cover 2 of the surfcraft 1 shown in figure 1 has a top riding surface 3 on which is disposed a neoprene or similar material body

protector panel 4. The tail section 15 of the top riding surface 3 is in the form of a bat-wing design. A foamed padded handle 5 is disposed on each corner of the nose section of the upper riding surface 3. Associated with the handles 5 are knuckle guards 6 formed of neoprene or similar material. The handles 5 incorporate leash attachment apertures 7 to which a leash (not shown) may be affixed.

The top riding surface 3 includes an aperture through which the inflation valve 14 of the bladder (not shown) can be accessed. The outer sleeve 2 also includes a side gusset 12.

10 The outer cover 3 also includes a bottom planing surface 8 shown in Figure 2. At the tail of the outer sleeve is disposed a nylon draining mesh 11 to allow water to be removed from inside the outer sleeve 3. A Velcro closure 10 is also disposed on the bottom planing surface 8. The handle 5, knuckle guard 6 and the leash attachment 7 can also be seen from the bottom view, as can the side gusset 12.

Figure 3 shows a bladder 21 substantially conforming to the shape of the outer sleeve shown in Figures 1 and 2. The bladder is retained in a substantially planar configuration by seams 22 that form ribs 20. The bladder 21 is provided with an inflation valve 14.

20 Figure 4 is a digital photograph of the surfcraft 1 shown in plan form in Figures 1 to 3. The outer cover 2 of surfcraft 1 has a neoprene body protector panel 4. The tail section 15 of the top riding surface 3 is in the form of a bat-wing design. A foamed padded handle 5 is disposed on each corner of the nose section of the surfcraft 1. The top riding surface 3 includes an aperture through which the inflation valve 14 of the bladder (not shown) can be accessed.

Figure 5 is a front view of surfcraft 1. The handles 5 can be seen at each corner. Figure 6 shows a rear view of surfcraft 1. The drainage mesh 11 is shown on the bottom planing surface 8.

30 Figure 7 shows the bottom view of surfcraft 1. Surfcraft 1 includes a bottom planing surface 8 shown in Figure 2. The handles 5 can also be seen from the bottom view. Figure 8 is a side view of surfcraft 1 and

shows the side gusset 12.

It will be appreciated that the invention described above may be subject to improvements and modifications that will be apparent without departing from the spirit and scope of the invention described herein.



## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A craft for supporting a rider on the water in the form of an elongate, substantially planar member having a top riding surface, and a bottom, planing surface wherein said planar member comprises an inner  
5 inflatable bladder secured within an outer sleeve wherein said sleeve comprises the top riding surface and the bottom, planing surface.
2. A craft according to claim 1 wherein the top riding surface is formed from neoprene or terry cloth material.
3. A craft according to claim 1 wherein the bottom, planing surface  
10 is formed from a heavy duty nylon fabric having fibres ranging from 240 to 840 denier.
4. A craft according to claim 1 wherein the inner inflatable bladder is formed from heavy duty polyvinylchloride of thickness in the range of from 18 to 30 gauge.
- 15 5. A craft according to claim 1 wherein the inner inflatable bladder is of ribbed construction so as to retain a planar shape.
6. A craft according to claim 1 wherein the outer sleeve is formed from a heavy duty nylon fabric having fibres ranging from 240 to 840 denier.
7. A craft according to claim 1 wherein the outer sleeve has a tail  
20 including a drainage port allowing water to be removed from the sleeve.
8. A craft according to claim 7 wherein the drainage port is in the form of a plasticised nylon mesh.
9. A craft according to claim 1 wherein the outer sleeve includes opposed handles for the rider in the form of closed cell polymeric foam  
25 covered with a nylon fabric.

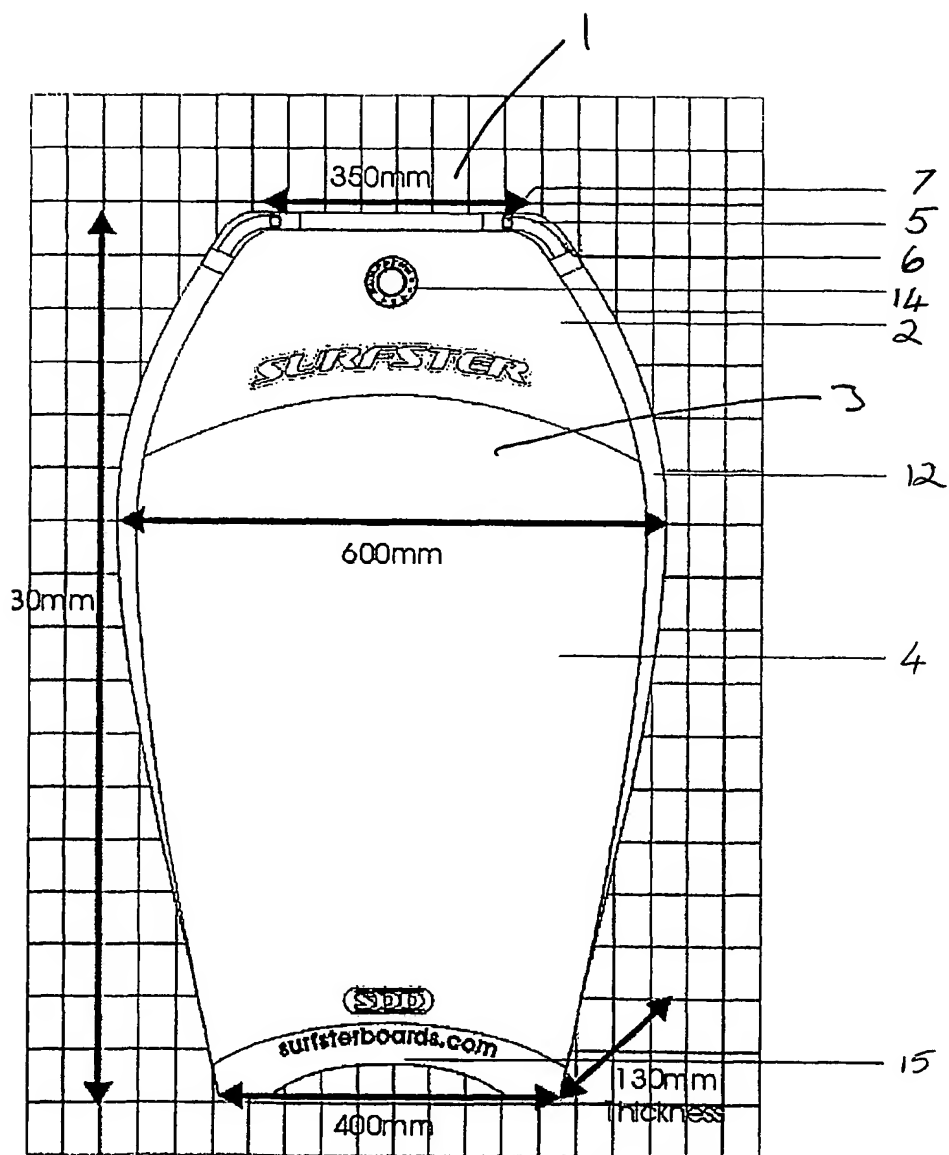
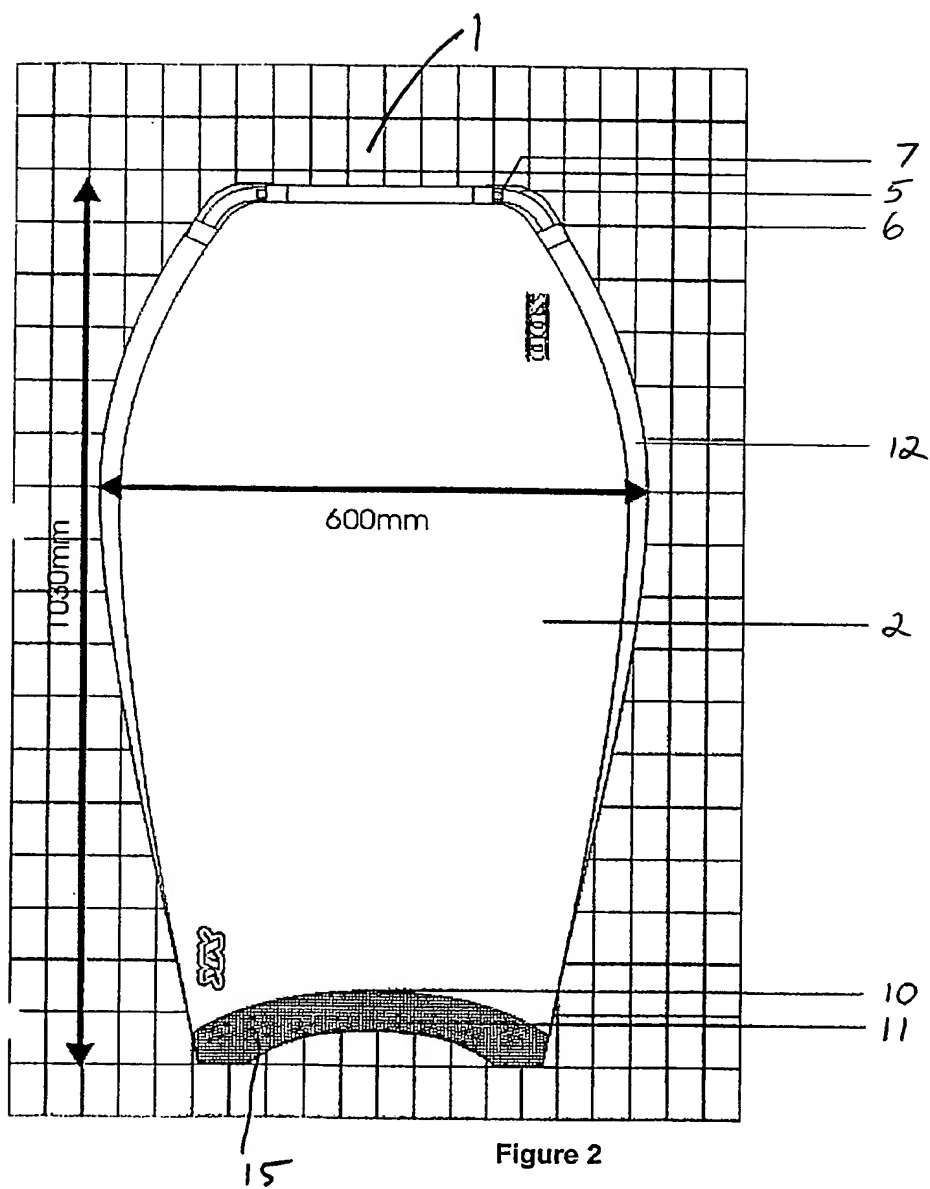


Figure 1



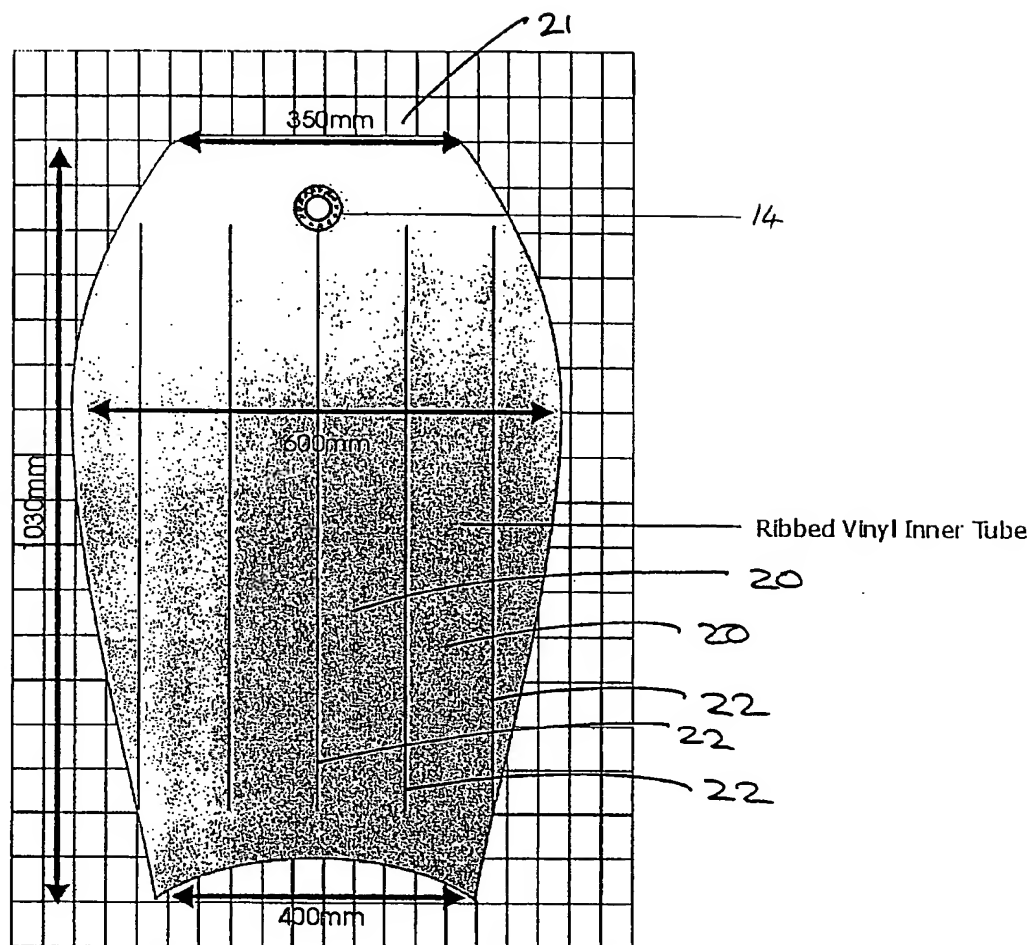
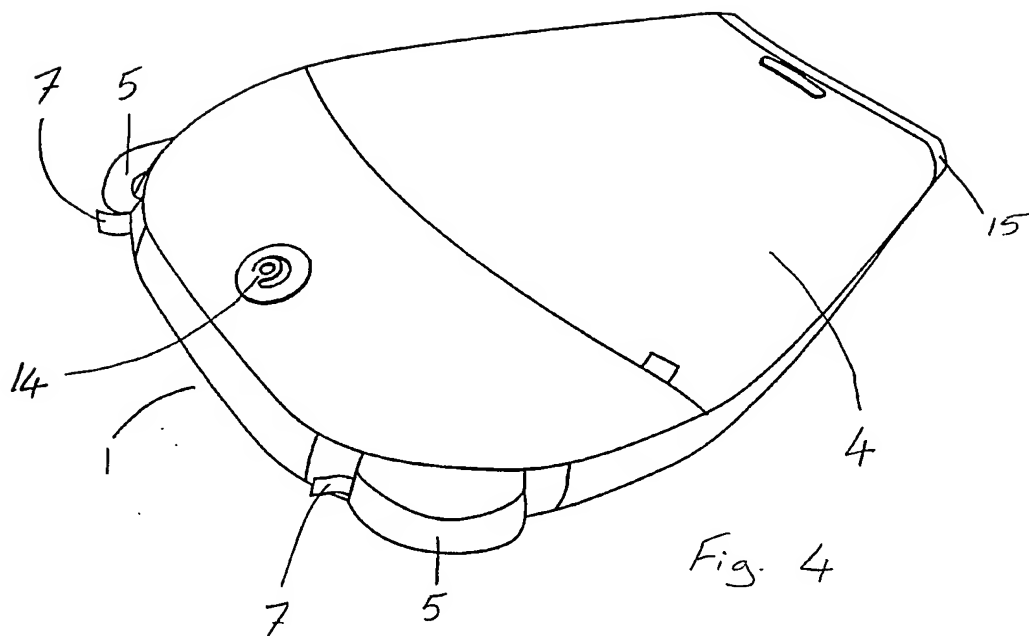
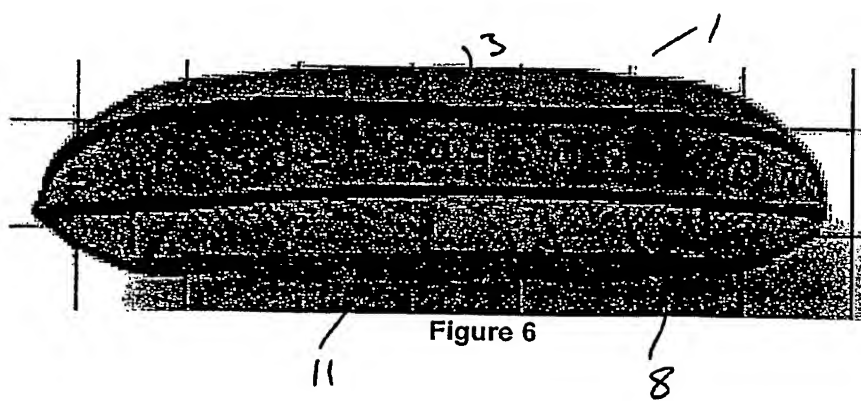
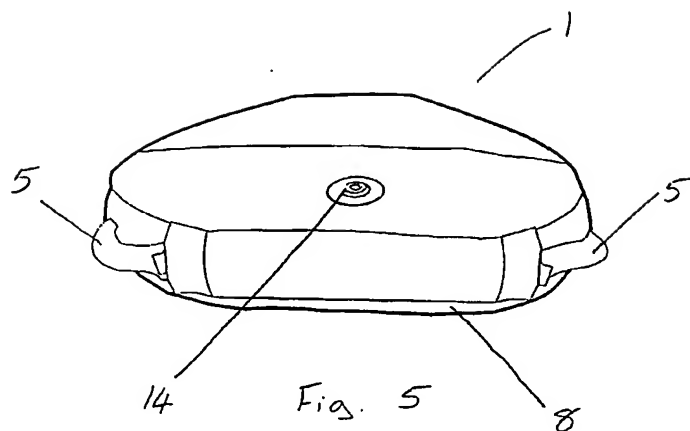
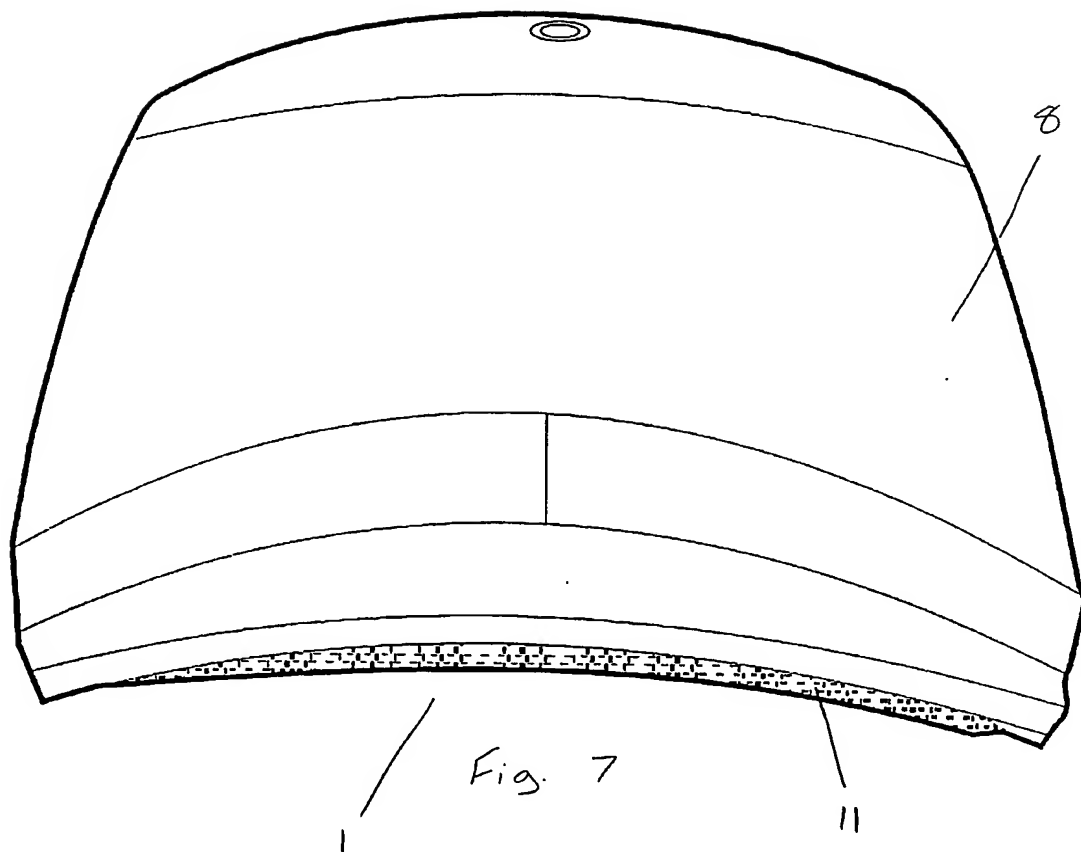
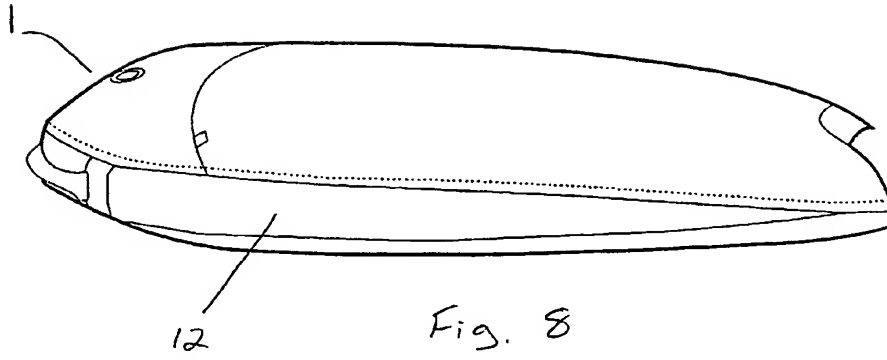


Figure 3











## INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int. Cl. <sup>7</sup> : B63B 35/79, 35/73		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI: IPC B63B 035/73, 035/79, 035/72, 7/08; A63C 015/1C and key words INFLATE, BLADDER, SLEEVE, ENVELOPE etc.		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5006087 A (PETERSON) 9 April 1991 Whole document	1-9
X	WO 84/03868 A (FARRUGIA) 11 October 1984 Whole document	1-9
X	GB 2171963 A (RICHARDS) 10 September 1986 Whole document	1-9
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>		
Date of the actual completion of the international search 15 January 2003		Date of mailing of the international search report 22 JAN 2003
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  L. DESECAR Telephone No : (02) 6283 2381

## INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 60409 B1 (WALD) 21 August 1985 Whole document	1-9
X	US 2036548 A (SILVERNAIL) 7 April 1936 Whole document	1

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/AU02/01732**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member		
US	5006087	NONE			
WO	8403868	EP 138932	FR 2567450	FR 2543507	
GB	2171963	NONE			
EP	60409	DE 3109016			
US	2036548	NONE			
					END OF ANNEX